

# SHADE & SAVE

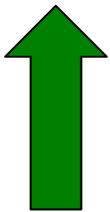
A human and ecological energy conservation program of



## Purpose of “Shade and Save” Tree Planting Program



- Lower energy usage – reduce heating and cooling bills
- Reduce heat island effect by shading paved areas
- Lower air pollution
- Reduce storm water runoff and erosion



- Increase savings on energy bills
- Increase aesthetic value to home and site
- Add economic value to neighborhood
- Aid in climate adaptation
- Improve water quality

## Objectives

- To lower energy consumption, and therefore costs, and raise the comfort level of residents and the community by purposefully planting shade trees at residential sites.
- To help achieve Greensboro’s sustainability objectives
- To enhance the inherent human connection with nature and its positive affect on people and the earth.

## Strategic Direction

Collaborate with the organizations, energy conservation experts, sustainability professionals and landscape companies to strategically plant shade trees on residential sites.

The planned placement of trees can be effective as energy saving home improvements, such as insulation and the installation of weather-tight windows and doors. Trees help reduce cooling costs and expand the living space into the outdoors. A minimum of two large trees around a home can reduce air conditioning costs up to 30 percent. By placing trees purposefully, homeowners can reduce the energy required to keep homes comfortable during winter and summer. Along with the reduction of energy bills, well-planned plantings add beauty, interest, increase property values and contribute to an increased quality of life for the community.

## Case History

There are currently no programs like this in North Carolina according to Leslie Moorman, Urban Forestry Program Coordinator, NC Division of Forest Resources.

## Program Components

- Contextual Education
- Tree Selection and procurement
- Proper siting of trees
- Organize planting
- Follow-up consultation with homeowners about proper tree care

## “Shade and Save” Research Findings

- Just three trees, properly placed around a house, can save up to 30% of energy use. *U.S. Forest Service Center for Urban Forest Research.*
- The net cooling effect of a young, healthy tree is equivalent to ten room-size air conditioners operating 20 hours a day. U.S. Department of Agriculture, [www.coolcommunities.org/urban\\_shade\\_trees.htm](http://www.coolcommunities.org/urban_shade_trees.htm)
- Large deciduous trees planted on the east, south and west sides of your home create soothing shade from the hot summer sun and reduce summer air conditioning costs by up to 35%. [www.arborday.org/globalwarning/summerShade.cfm](http://www.arborday.org/globalwarning/summerShade.cfm)
- The Cool Communities Shade Tree (CCST) Program greatly exceeded its goal of planting 14,000 trees during the 3 years ending Dec., 2008. The Program’s legacy will be a long-lasting group of measurable benefits for our region’s economy and environment. The program provided 17,398 shade trees since 2006, which result in an electric demand reduction of 2,957.66 kW and a total energy savings of 2,714,088 kWh per year on average over the next 20 years. [www.coolcommunities.org/urban\\_shade\\_trees.htm](http://www.coolcommunities.org/urban_shade_trees.htm)
- Although homeowners have intuitively used landscaping to save energy for many years, we are only beginning to realize the magnitude of the savings possible. According to one government study, winter heating bills may be reduced by as much as 15 percent, while summer cooling energy needs may be cut by as much as 50 percent. Conserving Energy with Plants – Leaflet No. 631, [www.ces.ncsu.edu/depts/hort/hil/hil-631.html](http://www.ces.ncsu.edu/depts/hort/hil/hil-631.html)

## Three Tier Savings

According to Erick Muecke, NC Division of Forest Resources, shade trees can benefit **all** households.

### Third Tier

Energy related benefits of shade trees add an extra layer of cost savings to annual home heating and cooling costs.

### Second Tier

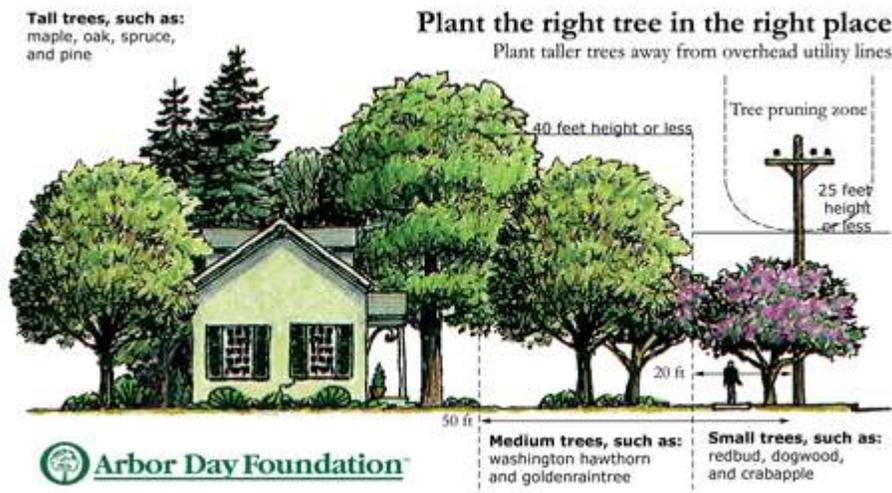
Homeowner actions and preferences like temperature settings provide a second level of potential savings.

### First Tier

Construction related details like replacement windows, caulking and air-tight wrappings provide one level of cost savings.

Thus, current North Carolina research indicates that shade trees will reduce energy costs by 30% **over and beyond** any benefits related to construction and home-owner activities.

This drawing demonstrates effective planting, placing the right tree in the right place. Trees properly placed can lower line clearance costs for utility companies, reduce tree mortality, and result in healthier community forests.



## **“Shade and Save” Scope of Work**

### 1. Contextual Education

- Put nature on your side – the gift of shade
- Multiple benefits of trees
- Energy conservation – ecologically
- Be part of the solution – create a legacy

### 2. Training

- Create rapport with the homeowner
- Learn multiple criteria for siting trees for maximum energy savings
- Recommend the appropriate species, shape, mature size of tree for the site
- Mark sites for planting trees

### 3. Installation

- Arrange for location of utilities
- Assemble materials and equipment at site
- Plant trees to ensure longevity
- Instruct homeowner in proper care of trees

## **“Shade and Save” Roles**

Program Coordinator	Design and coordinate all program activities.
Landscape Consultant	Train siting and planting technicians. Assist in educational activities.
Contextual Educator	Design and produce materials and events to educate homeowners.
Siting Technician	Consults with homeowner. Purposefully sites trees for maximum energy conservation; arranges for or marks utility wires. Educates homeowner in care of tree.

## To customize this program:

- Determine the scale of the project
  - number of homeowners?
  - number of trees per household?
- Determine the size of trees to be planted – to give beneficial shade in 3-5 years
- Decide the structure of the program, including educational and follow-up components
- Determine how the households will be selected



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